3T3 NRU Predictions: RC Millimole Regression

RC Millimole Regression: Log LD_{50} (mmol/kg) = 0.435 log IC_{50} (mM) + 0.625

Chemical[a]	Log Observed LD_{50} (mmol/kg)[1]	3T3 Log IC_{50} (mM)[2]	Log Predicted LD_{50} (mmol/kg)[3]	Log Observed LD_{50} - Log Predicted LD_{50} (mmol/kg)	Outlier[4]	Observed LD_{50} (mg/kg)[5]	3T3 IC_{50} (ug/mL)[3]	Predicted LD_{50} (mg/kg)[6]	Observed LD_{50} - Predicted LD_{50} (mg/kg)	Observed Toxicity Category[7] (mg/kg)	Predicted Toxicity Category[7] (mg/kg)
Acetaminophen	1.20	-0.501	0.407	0.795	Positive	2404	47.7	386	2018	2000-5000	300-2000
Acetonitrile	1.97	2.29	1.62	0.346		3798	7951	1711	2087	2000-5000	300-2000
Acetylsalicylic acid	0.744	0.574	0.875	-0.131		1000	676	1351	-351	300-2000	300-2000
Aminopterin	-2.17	-4.85	-1.48	-0.683		3.00	0.006	14.5	-11.5	< 5	5-50
5-Aminosalicylic acid	1.70	1.04	1.08	0.628		7749	1667	1824	5925	> 5000	300-2000
Arsenic II trioxide	-1.00	-2.00	-0.246	-0.754	Negative	19.8	1.96	112	-92.4	5-50	50-300
Boric acid	1.63	1.48	1.27	0.367		2660	1850	1144	1516	2000-5000	300-2000
Busulfan	-2.09	-0.501	0.407	-2.50	Negative	2.00	77.7	629	-627	< 5	300-2000
Cadmium II chloride	-0.319	-2.55	-0.484	0.165		88.0	0.518	60.2	27.8	50-300	50-300
Chloramphenicol	1.02	-0.402	0.450	0.571		3393	128	911	2482	2000-5000	300-2000
Citric acid	1.19	0.617	0.894	0.300		3000	796	1503	1497	2000-5000	300-2000
Cupric sulfate pentahydrate	0.080	-0.773	0.289	-0.209		300	42.1	486	-186	50-300	300-2000
Cycloheximide	-2.15	-3.18	-0.757	-1.39	Negative	2.00	0.187	49.3	-47.3	< 5	5-50
Dibutyl phthalate	1.63	-0.748	0.300	1.33	Positive	11998	49.7	555	11443	> 5000	300-2000
Diethyl phthalate	1.59	-0.316	0.487	1.10	Positive	8602	107	683	7919	> 5000	300-2000
Digoxin	-1.64	-0.225	0.527	-2.16	Negative	18.0	466	2630	-2612	5-50	2000-5000
Dimethylformamide	1.58	1.85	1.43	0.152		2800	5224	1974	826	2000-5000	300-2000
Diquat dibromide monohydrate	-0.173	-1.65	-0.094	-0.079		243	8.04	291	-48.3	50-300	50-300
Ethanol	2.48	2.15	1.56	0.922	Positive	14008	6523	1675	12333	> 5000	300-2000
Ethylene glycol	2.14	2.59	1.75	0.387		8567	24317	3515	5052	> 5000	2000-5000
Gibberellic acid	1.26	1.35	1.21	0.047		6305	7810	5664	640	> 5000	> 5000
Glycerol	2.14	2.43	1.68	0.458		12691	24655	4418	8273	> 5000	2000-5000
Hexachlorophene	-0.824	-1.99	-0.239	-0.585		61.0	4.19	235	-174	50-300	50-300
Lactic acid	1.62	1.53	1.29	0.327		3730	3044	1757	1973	2000-5000	300-2000
Lithium I carbonate	1.21	0.881	1.01	0.198		1187	562	753	434	300-2000	300-2000
Meprobamate	0.561	0.376	0.789	-0.228		794	519	1342	-548	300-2000	300-2000
Mercury II chloride	-2.43	-1.82	-0.166	-2.27	Negative	1.00	4.12	185	-184	<5	50-300
Phenol	0.643	-0.152	0.559	0.085		414	66.3	341	73.3	300-2000	300-2000
Phenylthiourea	-1.71	-0.285	0.501	-2.21	Negative	3.00	79.0	482	-479	< 5	300-2000
Potassium I chloride	1.54	1.68	1.35	0.188		2602	3551	1688	914	2000-5000	300-2000
2-Propanol	1.99	1.78	1.40	0.589		5843	3618	1507	4336	> 5000	300-2000
Propranolol HCl	0.201	-1.33	0.047	0.154		470	13.9	329	141	300-2000	300-2000
Sodium arsenite	-0.501	-2.23	-0.347	-0.154		41.0	0.759	58.5	-17.5	5-50	50-300

3T3 NRU Predictions: RC Millimole Regression

Chemical[a]	Log Observed LD_{50} (mmol/kg)[1]	3T3 Log IC_{50} (mM)[2]	Log Predicted LD_{50} (mmol/kg)[3]	Log Observed LD_{50} - Log Predicted LD_{50} (mmol/kg)	Outlier[4]	Observed LD_{50} (mg/kg)[5]	3T3 IC_{50} (ug/mL)[3]	Predicted LD_{50} (mg/kg)[6]	Observed LD_{50} - Predicted LD_{50} (mg/kg)	Observed Toxicity Category[7] (mg/kg)	Predicted Toxicity Category[7] (mg/kg)
Sodium chloride	1.71	1.91	1.46	0.255		2998	4730	1666	1332	2000-5000	300-2000
Sodium dichromate dihydrate	-0.719	-2.71	-0.552	-0.167		50.0	0.587	83.6	-33.6	5-50	50-300
Sodium I fluoride	0.632	0.269	0.742	-0.110		180	78.0	232	-51.7	50-300	50-300
Sodium hypochlorite	2.08	1.17	1.13	0.944	Positive	8910	1103	1014	7896	> 5000	300-2000
Sodium oxalate	0.063	-0.550	0.386	-0.322		155	37.7	326	-171	50-300	300-2000
Sodium selenate	-2.07	-0.814	0.271	-2.34	Negative	1.60	29.0	353	-351	< 5	300-2000
Thallium I sulfate	-1.24	-1.94	-0.221	-1.02	Negative	29.0	5.74	304	-275	5-50	300-2000
Trichloroacetic acid	1.49	0.742	0.948	0.538		4999	902	1449	3550	2000-5000	300-2000
1,1,1-Trichloroethane	1.89	2.11	1.54	0.344		10298	17248	4664	5635	> 5000	2000-5000
Triethylenemelamine	-2.31	-2.88	-0.626	-1.68	Negative	1.00	0.272	48.4	-47.4	<5	5-50
Triphenyltin hydroxide	-0.921	-4.33	-1.26	0.337		44.0	0.017	20.3	23.7	5-50	5-50
Valproic acid	1.01	0.803	0.974	0.034		1471	916	1359	112	300-2000	300-2000
Xylene	1.61	0.832	0.987	0.621		4300	721	1030	3270	2000-5000	300-2000

[a]Three chemicals were excluded because no rat oral LD_{50} was identified: epinephrine bitartrate, colchicine, and propylparaben. Carbon tetrachloride and methanol were excluded because IC_{50} values could not be determined. Twenty-one chemicals were excluded based on their mechanisms of action: amitriptyline HCl, atropine sulfate, caffeine, carbamazepine, chloral hydrate, dichlorvos , disulfoton, endosulfan, fenpropathrin, glutethimide, haloperidol, lindane, nicotine, paraquat, parathion, phenobarbital, physostigmine, potassium cyanide, procainamide HCl, strychnine, and verapamil HCl (see **Section 6**, **Table 6-3**)

[1]original RC LD_{50} values came largely from the 1983/84 RTECS®. Values for non RC chemicals came from current RTECS® and Hazardous Substances Data Bank.

[2]combined 3T3 IC_{50} values from three laboratories

[3]LD_{50} determined using RC regression: Log LD_{50} (mmol/kg) = 0.435 log IC_{50} (mM) + 0.625

[4]a difference > 0.699 (or log 5) identifies a chemical as discordant (i.e., an "outlier")

[5]converted from mmol/kg to mg/kg

[6]LD_{50} in mg/kg converted from results of RC regression

[7]Globally Harmonized System (GHS) hazard classification:

Category	Oral LD_{50} Limits
1	$LD_{50} \leq 5$ mg/kg
2	$5 < LD_{50} \leq 50$ mg/kg
3	$50 < LD_{50} \leq 300$ mg/kg
4	$300 < LD_{50} \leq 2000$ mg/kg
5	$2000 < LD_{50} \leq 5000$ mg/kg
Unclassified	$LD_{50} > 5000$ mg/kg